education

MPUMALANGA PROVINCE

REPUBLIC OF SOUTH AFRICA

LIFE SCIENCES

WALK IN FINAL EXAMINATION REVISION

TEACHER'S BOOKLET

11-16 NOVEMBER 2023

GRADE 12

The booklet consists of 24 pages.

PAPER 1

SECTION A

QUESTION 1

1.2 1.2.1 Vulva✓

1.2.2 Adrenal ✓ gland

1.2.3 Homeostasis ✓

1.2.4 Cataract ✓

1.2.5 Copulation ✓

1.2.6 Fallopian tubes ✓

1.2.7 Carbon dioxide ✓

1.2.8 Goitre ✓

1.2.9 Morula ✓

1.2.10 Maculae ✓

1.2.11 Abscisic acid✓

1.2.12 Synapse✓

1.2.13 Tropism ✓

1.2.14 Apical dominance✓

1.2.15 Reflex action✓

1.2.16 Cones✓

1.2.17 Hypothalamus✓

1.2.18 Vasodilation✓

1.2.19 Umbilical cord✓

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1.2.20 Morula✓

1.2.21 Goitre✓

1.2.22 Auxin✓

1.2.23 Vivipary

1.2.24 Amniotic✓ egg

1.2.25 Amnion✓

1.2.26 Parental care✓

1.2.27 Epididymis✓

1.2.28 Menstrual cycle✓

1.2.29 Fallopian tubes✓ /oviducts

1.2.30 Morula ✓

1.2.31 Receptors✓

1.2.32 Aqueous humor✓

1.2.33 Organ of Corti✓

1.2.34 Medulla of oblongata

1.2.35 Alpha cells

(28 x 1) **(29)**

1.3

1.3 1.3.1 None ✓✓

1.3.2 A only ✓✓

1.3.3 Both A and B ✓✓

1.3.4 None ✓✓

1.3.5 Both A and B✓✓

1.3.6 A only✓✓

1.3.7 B only✓✓

1.3.8 A only✓✓

1.3.9 Both A and B✓✓

1.3.10 None ✓✓

1.3.11 Both✓✓

1.3.12 B✓✓

(12 x 2) = 24

SHORT QUESTIONS

1.1 1.1.1 (a) D✓ - Follicle stimulating hormone✓/FSH (2)
(b) A✓ - Progesterone✓ (2)

1.1.2 (a) (Primary) follicle✓ (1)
(b) Corpus luteum✓ (1)

1.1.3 (a) Ovulation✓ (1)
(b) Luteinising hormone✓/LH (1)

1.1.4 Puberty✓ (1)

1.1.5 Mitosis✓ (1)
(10)

1.2 1.2.1 (a) A ✓ – Placenta ✓
(Mark first ONE only) (2)

(b) C ✓ – Vagina ✓
D ✓ – Cervix ✓
(Mark first ONE only) (2)

(c) B ✓ – Amniotic fluid ✓
(Mark first ONE only) (2)
(6)

1.3 1.3.1 Reflex arc ✓ (1)

1.3.2 (a) A ✓ (1)

(b) E ✓ (1)

(c) B ✓ (1)

1.3.3 C, D, F ✓ (accept any order) (1)

1.3.4 Dendrite ✓ (1)

1.3.5 Vertebrae ✓

Meninges ✓

Cerebrospinal fluid ✓
(Mark first TWO only) Any (2)

1.3.6 Myelin sheath ✓ (1)
(9)

1.4 1.4.1 Sensory neuron✓ (1)

1.4.2 (a) Nuceus✓ (1)

(b)Cell body✓ (1)

(c)Dendrites✓ (1)

1.4.3 (a) Carry impulses away from the cell body✓ (1)

(b) - insulates the axon✓
- Speeds up the transmission of impulses✓ (1)
(Mark first ONE only)

1.4.4 **Y** to **X**. ✓ (1)
(7)

1.5 1.5.1 (a) Semi circular canals✓ (1)

(b)Ossicles✓ (1)

(c)Auditory nerve✓ (1)

1.5.2 Grommet✓ (1)

1.5.3 B✓ (1)

1.5.4 (a) - it equalises pressure on either side of the tympanic membrane✓ (1)
(b) – traps sound waves✓
- and direct them into the auditory canal✓ (2)

1.5.5 Cristae✓ (1)

1.5.6 F ✓- Cochlea✓ (2)
(10)

1.6

1.6.1 Inhibit✓ (1)

1.6.2 Meristematic✓cells/apical meristem (1)

1.6.3 Gibberellins✓ and auxins✓ (2)

1.6.4 Gibberellins✓ and abscisic acid✓ (2)

1.6.5 (a) phototropism✓ (1)
(b) geotropism✓ (1)
(8)

SECTION B

RESPONSE TO THE ENVIRONMENT IN PLANTS

2.1 2.1.1 Phototropism ✓ (1)

2.1.2 Auxins ✓ (1)

2.1.3 A ✓ and B ✓ (2)

2.1.4
- Because the stem is exposed to unilateral light ✓/light from one side only,
- auxins/the hormone are/is destroyed by the light ✓/move away from light.
- causing the auxins/ hormone concentration to be high on the dark side ✓/side away from the light
- therefore, cells are stimulated to elongate/grow on the dark side. ✓/side away from the light.
- The auxin/ hormone concentration is low on the side receiving light ✓
- therefore, cells are not stimulated to elongate/ grow on this side.✓ / side facing the light
- Therefore, the plant bends/grows towards the light.

Any (4)

2.1.5
- As auxins are removed ✓
- plants are kept short ✓/fruit is closer to the ground
- fruit is easier to pick ✓/harvest.
- Therefore, requires less costly equipment✓/saves on labour costs.

OR

- As auxins are removed ✓
- There will be more lateral branches✓/lateral branches are longer
- they can carry more fruit ✓/higher yields.
- Therefore, more income from sales. ✓

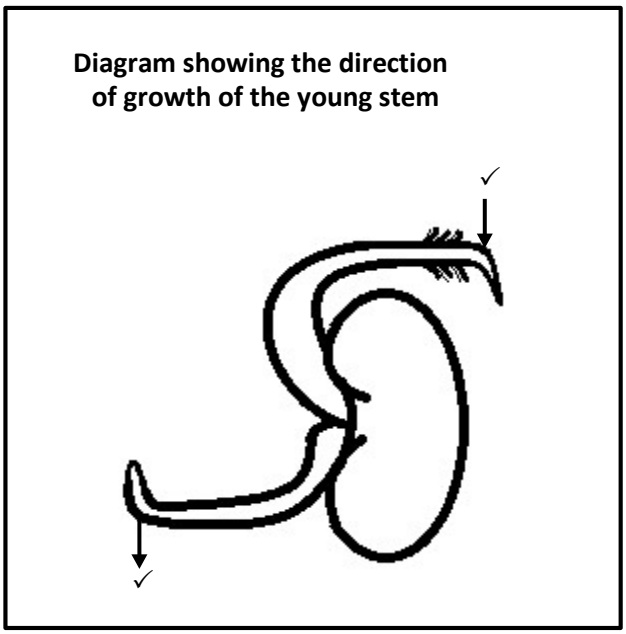
Any (3)
(11)

2.2 2.2.1 (a) Evenly distributed ✓ at the tip (1)

(b) Evenly distributed ✓ at the tip (1)

2.2.2 - To cancel the effect (influence) of light ✓ stimuli on the direction of growth therefore,
- only gravity ✓ influences the direction of growth
(Mark first ONE only) (2)

2.2.3



Marking criteria	Marks
Caption	1
Young shoot bending upwards from the horizontally placed position	1
Young root bending downwards from the horizontally placed position	1

(3)

2.2.4- When the root is placed horizontally ✓
- auxins move to the lower side ✓
- due to gravity ✓
- The high concentration of auxins on the lower side inhibits growth ✓ on the lower side
- The lower concentration of auxins on the upper side stimulates growth ✓ in the upper side
- The upper side grows faster ✓/uneven growth takes place
- causing the root to bend downwards ✓/grow toward gravity (7)

ENDOCRINE SYSTEM AND HOMEOSTASIS

3.1 3.1.1 ADH levels✓ (1)

3.1.2 (a) Non-smokers serve as a control to determine a baseline for people with no nicotine in their blood✓/control for comparison to normal levels. (1)

(b) Before breakfast measurements serve as a control to determine smokers' baseline for ADH✓/to check if the increase of nicotine would have an effect or not/to determine the cause and effect relationship/isolate the effect of the independent variable (nicotine). (1)

3.1.3 - To ensure validity✓ (1)
- To isolate the variable being tested✓ (1)

3.1.4 When the water level of the blood increases:
- Less ADH is transported into the kidneys✓
- Collecting ducts and the renal tubules become less permeable to water✓
- Less water is re-absorbed/more water is released✓
- Causing the water level in the blood to return to normal✓ (4)

3.1.5 Increased osmolality - high salt content in the urine✓/more concentrated urine
Decreased free water clearance – less urine released✓ (2)

(11)

3.2 3.2.1 (a) Insulin✓ (1)

(b)Pancreas✓ (1)

(c)Liver✓ (1)

3.2.2Diabetes✓mellitus (1)

3.2.3When the glucose level is high:
- the islets of Langerhans/pancreas are stimulated✓
- to secrete insulin✓
- which stimulates the liver✓
- to convert the excess glucose into glycogen✓ and
- stimulates the absorption of glucose into liver cells✓
- then blood glucose level decreases✓* and
- returns to normal✓* Any (4 + 2) compulsory* (6)

(10)

3.3 T✓

Vasodilation	Vasoconstriction
Blood vessels dilates✓	Blood vessels constrict✓
More blood flows to the skin✓	Less blood flows to the skin✓
More heat lost from the skin✓	Less heat lost from the skin✓
More blood is sent to the sweat glands✓	Less sweat sent to the sweat glands✓

(Mark first TWO only) Any 2 x 2 + 1 (table) **(5)**

3.4 3.4.1 Impairment of mental/physical performance✓/May pose a serious risk to health (1)

3.4.2 0,4 – 0,49 $L.h^{-1}$ ✓ (1)

3.4.3
– The hypothalamus/osmoreceptors is/are stimulated ✓
– and sends impulses to the pituitary gland ✓/hypophysis
– to secrete **more** ADH. ✓
– ADH increases the permeability of the renal tubules✓
– of the kidney.✓
– **More** water is reabsorbed into surrounding blood vessels. ✓
– The water level in the blood increases to normal ✓ levels.
– **Less** urine is produced✓
/Urine becomes **more** concentrated
/Less water is lost through urine. Any (5)

3.4.4
– Sweating increases ✓ causing the
– body temperature to decrease. ✓
– This is because more evaporation of sweat, ✓ causes
– **more** cooling of the skin surface/blood beneath skin surface. ✓ (4)

3.4.5
– Make shifts shorter/at cooler times of the day/morning and night. ✓
– Provide clothing/shade that helps to keep workers cooler.✓
– Supply sufficient (cold) water/fluids for workers. ✓ Any (2)

(13)

3.5 3.5.1 (a) A – Liver ✓
B – Pancreas ✓ (2)

(b) Insulin ✓ (1)

3.5.2 A regulatory substance in the body that stimulates cells to bring about change. ✓✓/A protein/chemical messenger in the body. (2)

3.5.3 – Excess glucose cannot be converted to glycogen ✓
– in the liver✓/organ A
– thus, the glucose level in the blood remains above normal✓ /blood glucose levels are high
– the person has diabetes.✓
Any (3)

3.5.4 Thyroxin ✓
Adrenalin ✓
Glucagon ✓ (3)
(11)

3.6 3.6.1 - Blood glucose level increases✓
- Pancreas is stimulated✓
- More insulin is secreted✓ into the blood
- Which is sent to the liver✓ and the muscles
- To convert excess glucose✓ into glycogen✓
- And glucose level in the blood decreases ✓ (5)

3.6.2 Diabetes mellitus✓ (1)

3.6.3 - High thyroxin levels increase metabolic rate✓ /cellular respiration
- this results in more glucose and fats being burnt✓/broken down
- resulting in weight loss✓ (3)

3.6.4 Thyroid gland✓ (1)

(10)

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3.7

3.7.1 Adrenal gland✓ (1)

3.7.2 (a) Aldosterone✓ (1)

(b)Adrenalin✓ (1)

3.7.3 [(1 – 0,5) ÷ 0,5] ✓ x 100 ✓= 100%✓ (3)

3.7.4 - Increased salt concentration in the blood✓
- decreases the secretion of aldosterone✓
- This causes less salt to be reabsorbed✓ / more salt to be excreted
- which reduces water reabsorption✓
- more water remains in the renal tubules✓
- resulting in more urine formed ✓ Any FIVE (5)

3.7.5 - High aldosterone levels✓ in the blood
- Will cause a high reabsorption of salt✓ into the blood
- Causing more water to be reabsorbed✓ into the blood
- Resulting in low volume of urine✓ Any THREE (3)

(14)

RESPONSE TO THE ENVIRONMENT IN HUMANS

4.1 4.1.1 Cell body ✓ (1)

4.1.2 (a) Dendrite ✓ (1)
(b) Axon ✓ (1)

4.1.3 Sensory neuron ✓ (1)

4.1.4 Interneuron ✓ (1)

4.1.5 (a) Deterioration of myelin sheath ✓ (1)

(b) Extremely slow ✓ transmission of impulses (1)

(c)Multiple Sclerosis ✓ (1)
(8)

4.2 4.2.1 Accommodation✓ (1)

4.2.2 B✓ and D✓ (2)
(Mark the FIRST TWO only)

4.2.3 - Circular muscles relax✓
-Radial muscles contract✓
-The pupil size increases✓
-More light enters the eye✓ (4)

4.2.4 B✓ (1)

4.2.5 Astigmatism✓ (1)

4.2.6 - Wearing glasses with a corrective lenses✓ or lens.
-Laser surgery✓ Any (1)
(Mark the FIRST ONE only) **(10)**

4.3 4.3.1 (a) Corpus callosum✓ (1)

(b) Pituitary gland✓ (1)

(c) Spinal cord✓ (1)

4.3.2 -Control voluntary actions✓
-Responsible for higher thought processes✓ (memory, judgement etc)
-Interprets sensations✓ (any correct example) (3)
(Mark the FIRST THREE only)

4.3.3 -Cerebellum receives impulses✓
-from the receptors in the ear✓/cristae and maculae
-via the auditory nerve✓
-Cerebellum sends impulses to the skeletal muscles✓
-to restore balance✓ (3)

4.3.4 -Part E is responsible for breathing✓
-Breathing would stop✓
-resulting in death✓ **OR**

-Part E is responsible for heart beat✓
-Causing the heart to stop✓
-Resulting in death✓ Any (2)

4.3.5 -It is protected by meninges✓ against friction
-Kept moist by the cerebrospinal fluid✓ Any (1)
(Mark the FIRST ONE only) **(12)**

FINAL!

4.4 - The autonomic nervous system is made up of two branches/double innervation that work antagonistically✓,
- the sympathetic nervous system✓
- stimulates the involuntary processes✓ and
- the parasympathetic nervous system✓
- inhibits involuntary processes✓ **(5)**

4.5 4.5.1 (a) F: Tympanic membrane✓/ Ear drum (1)
-Receives sound waves from the auditory canal✓
-Converts/transforms sound waves into vibrations✓
-Transmits vibrations into ossicles✓ Any 1 (1)
(Mark first ONE only)

(b) D: Round window✓ (1)
-Releases pressure from the inner ear✓
-Absorbs excess pressure waves to release pressure/ prevent echos ✓ Any 1 (1)
(Mark first ONE only)

4.5.2 Ossicles✓/(hammer, anvil, stirrup)/ (malleus, incus, stapes) (1)

4.5.3 (a) E✓ (1)

(b) B✓ (1)

4.5.4 Cristae✓ and maculae✓ (2)

4.5.5 - Increase in pressure in the middle ear✓/the ossicles do not vibrate freely
- Fewer pressure waves will be set up on the cochlear✓/fewer vibrations will be sent to the oval window
- Organ of Corti will be less stimulated✓/the cerebrum will be stimulated differently/incorrectly
- This will lead to hearing impairment✓/loss of hearing (4)
(13)

4.6 4.6.1 (a) Pupillary mechanism✓ (1)

(b) Light✓ (1)

4.6.2 F✓ - Lens✓ (2)

H✓ - Suspensory ligament✓ (2)

4.6.3 (a) - Binocular/stereoscopic vision will be reduced✓
- will not be able to see the car in three dimensional image✓
- this will disturb the judgement of the distance between the car and your body✓
- which will result in an increased risk of an accident✓ (4)

(b) Rods cells✓/light and dark receptors (1)

4.6.4 - The lens is not elastic✓/cannot change shape
- light rays fall behind the retina✓/light is not refracted enough
- this causes blurred vision✓/blurry image is formed (3)

(14)

4.7 4.7.1 Right ✓ side (1)

4.7.2 Decreased pupil size ✓

Drooping eyelid ✓

Decreased sweating ✓
(Mark first ONE only) Any (1)

4.7.3 Cerebrum ✓ (1)

4.7.4 Autonomic ✓ nervous system (1)

4.7.5 As pupil is too small it cannot dilate enough to let more light in ✓ there is a greater risk of having an accident at night ✓, because it will be difficult to see in the dark ✓/dim light. Any (2)

4.7.6

Adrenalin	**Parasympathetic nervous system**
increases heart rate✓	decreases heart rate✓
constricts blood vessels in the skin✓/vasoconstriction	dilates blood vessels in skin✓/vasodilation
dilates pupils✓	constricts pupils✓
increases blood pressure✓	decreases blood pressure✓
widens bronchioles✓	narrows bronchioles✓
decreases peristalsis✓	increases peristalsis✓
causes relaxation of the bladder wall✓	causes contraction of the bladder wall✓
stimulates sweat secretion✓	less sweat is secreted✓

(Mark first TWO only) Any (2 x 2) + 1 Table (5)

4.7.7 Accommodation ✓*
- Ciliary muscles contract ✓
- Suspensory ligaments slacken ✓
- Tension on the lens decreases ✓
- Lens becomes more convex ✓
- Increasing the refractive power of the lens ✓
- Forming a (clear) image on the retina ✓

Any (3 + 1* compulsory) (4)
(15)

4.8 4.8.1 (a) Sensory neuron✓ (1)

(b) Dendrites✓ (1)

4.8.2 H
- Receptor receives the stimuli✓
- and converts it to an impulse✓
- connects to the sensory neuron✓
- serves to protect the body✓ Any 3

(3)

4.8.3 - no insulation✓/loss of insulation/no protection **causing** the delay of impulse acceleration✓/transmission
-loss of electrical impulses/decreased number of electrical signals✓ **causing** a delay in the reflex action✓/uncontrollable muscle spasm

Any (2 x 2) (4)

4.8.4 - Transmits impulse from one neuron to the next✓
- One-directional transmission of impulses✓
- Impulses can be transmitted to more than one neuron✓
- Can determine which stimuli will be transmitted✓ Any 2 (2)

(11)

4.9 4.9.1 (a) Cerebrum✓ (1)

(b) Pituitary gland✓/hypophysis (1)

4.9.2
- B/cerebrum controls voluntary✓ and (1)
- C/cerebellum coordinates voluntary action✓ (1)

4.9.3 Reflex action – fast, involuntary action due to an unexpected stimulus✓ controlled by the spinal cord✓ and does not involve the brain✓ (2)

Involuntary action - under the control of medulla oblongata✓, the same stimulus leads to the same response✓ (breathing,peristalsis etc.) (2)

4.9.4 - The hypothalamus is the control centre for thirst✓/it is stimulated by the level of water present in the blood
- Produces ADH✓ which controls the concentration of water in the blood✓/osmoregulation
-It sends an impulse to the hypophysis (pituitary gland)✓ to release either more or less ADH✓ (3)

-

4.9.5 No/decreased protection of the brain✓
Cerebrospinal fluid /CSF will leak✓/brain not buffered/no shock absorption Any 1 (1)
(12)

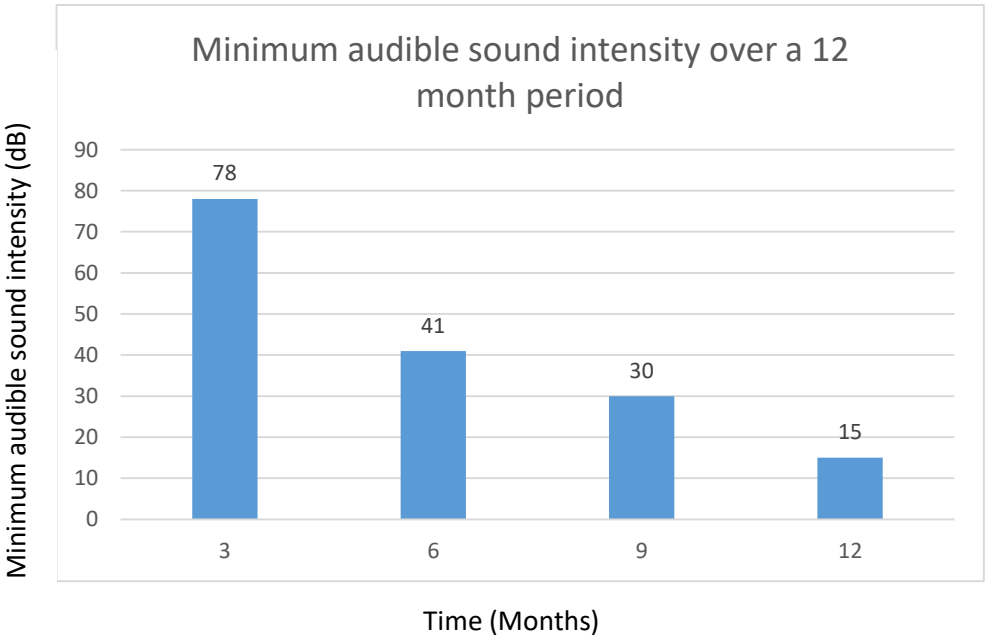
4.10 4.10.1 (a) Ossicles ✓ (1)

(b) Cochlea ✓ (1)

4.10.2 – Sound waves cannot be (effectively) converted to vibrations by the eardrum✓/tympanic membrane
– and the ossicles do not vibrate ✓/vibrate less
– therefore, the oval window does not vibrate ✓/vibrates less
– no/little pressure waves form✓ in the cochlea
– The Organ of Corti picks up little or no stimulus ✓
– and little or no impulse is carried by the auditory nerve ✓
– with little or no interpretation occurring in the cerebrum✓ Any (4)

4.10.3 The person can hear 15 dB ✓/normal dB range/0-25 dB range (1)

4.10.4



CRITERIA:

Guidelines for assessment of the graph	ELABORATION	MARK
Correct type of graph (**T**)	Bar graph drawn	1
Caption for graph (**C**)	Both variables included	1
Axes labels (**L**)	X- and Y-axis correctly labelled with units	1
Scale for X- and Y-axis (**S**)	Equal space and width of bars on X-axis AND Correct scale for Y-axis	1
Plotting of points (**P**)	1 to 3 co-ordinates plotted correctly All coordinates plotted correctly	1 2

(6)

(13)

4.11 4.11.1 (a) C ✓ (1)

(b) A ✓ (1)

(c) B ✓ (1)

4.11.2 The Eustachian tube ✓ allows air to move into and out of the middle ear. ✓ (2)

4.11.3
- Cristae ✓
- in the ampullae/semi-circular canals are stimulated ✓
- by a change in the speed and direction of the body✓/head
- the stimulus is converted into an impulse ✓
- the impulses are sent via the auditory nerve ✓
- to the cerebellum ✓
- the cerebellum then sends impulses to the skeletal muscles ✓ to restore the balance.

Any (5)

(10)

REPRODUCTION

5.1 5.1.1 (a) D✓ - spermatogenesis✓ (2)

(b) G✓ - oogenesis✓ (2)

5.1.2 - connects the ovaries to the uterus✓
- transports the ovum to the uterus✓
- the site for fertilization✓ Any 1 (1)

(Mark first ONE only)

5.1.3 - becomes more glandular✓
- becomes more vascular✓
- thickens for implantation✓ (3)

(8)

5.2 5.2.1 Deepening of the voice ✓/larynx enlarges
Broadening of the chest ✓/shoulders
More muscular physique✓
Penis/testes/sex organs enlarge ✓
(Mark first TWO only) Any (2)

5.2.2 To determine the relationship between the density of beard growth and the concentration/level of testosterone. ✓✓

OR

To determine the effect of testosterone levels on beard density✓✓
(Must include "to" and both variables) (2)

5.2.3 All males should have the same:
– Age ✓
– Diet ✓
– Health ✓/level of activity
– Race ✓
– Environment ✓
(Mark first THREE only) Any (3)

5.2.4 $\frac{0,52+0,53+0,52+0,51+0,53}{5}$ ✓ OR $\frac{0,261}{5}$

= 0,522 ✓ µg ✓ (accept 0,52 or 0,5) (3)

5.2.5 Rejected ✓* A greater density of beard growth was not shown to correspond with an increased testosterone level. ✓/Even when density of hair growth was more, testosterone levels remained similar.
(1* compulsory + 1) (2)

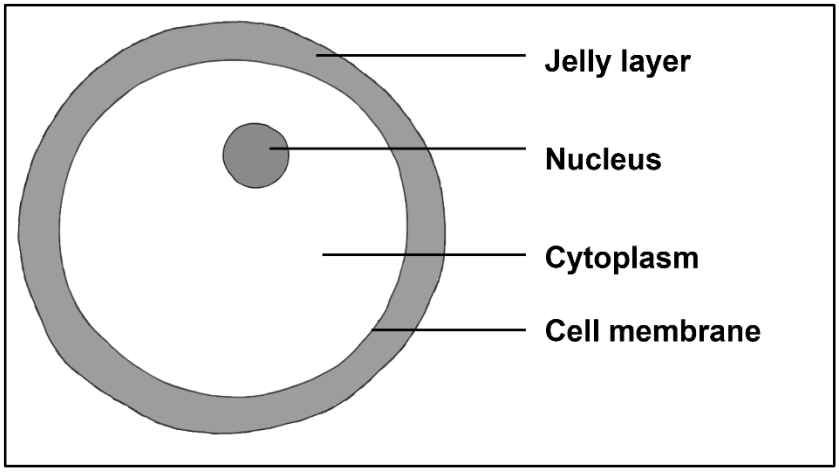
(12)

5.3 5.3.1 C – Primary follicle ✓ (1)

5.3.2 Ovarian ✓ cycle (1)

5.3.3 C; B; A ✓; E; D ✓
(Mark first FIVE only) (2)

5.3.4 Diagram of an ovum



Criteria	Elaboration	Symbol	Mark
Drawing	Correct representation of an ovum (single, round cell with a nucleus)	**D**	(1)
Labels	ANY correct labels as shown in the sketch above. • One correct label • Two correct labels	**L**	 (1) (2)
Caption	Structure identified as an ovum	**C**	(1)
		TOTAL	(4)

(4)

5.3.5 (a) FSH ✓ and LH ✓ (2)

(b) Oestrogen ✓ and progesterone ✓ (2)

5.3.6 – The degeneration of the corpus luteum✓
– leads to a decrease in progesterone.✓
– The endometrium is no longer maintained ✓/shed/menstruation occurs.
– Thus, FSH increases ✓ causing the next cycle to start. Any (3)
(15)

5.4 5.4.1 (a) LH✓ (1)

(b) Progesterone✓ (1)

5.4.2 Oestrogen✓ (1)

5.4.3 - A graafian follicle will not be stimulated✓
- no ova will be released✓ /ovulation will not occur
- therefore, a woman will not be able to reproduce✓ /fertilisation will not occur (3)

5.4.4 – hormone Y/progesterone levels✓
- start to decrease✓
- due to the corpus luteum disintegration✓ (3)
(9)

5.5 5.5.1 (a) Chorion✓ (1)

(b) Cervix✓ (1)

5.5.2
- Keeps foetus hydrated✓
- Keeps foetus within small temperature changes✓
- Acts as shock absorber✓/prevents mechanical injury
- Allows free foetal movements✓ Any (2)

(Mark the FIRST TWO only)

5.5.3
- Nitrogenous waste will not be excreted✓
- and will accumulate in the foetus✓
- resulting in slow/under development✓/death of the foetus

OR

- Oxygen and nutrients will not reach the foetus✓
- leading to poor/no development✓/suffocation
- leading to death of the foetus✓ (3)

5.5.4
- Excretory✓
- Digestive✓
- Respiratory✓/gaseous exchange
- Immune✓ system

Any (2)

(Mark the FIRST TWO only)

5.5.5
- A diploid zygote is formed✓
- and it divides by mitosis✓
- to form a ball of cells✓
- called a morula✓
- which further divides by mitosis✓
- to form a hollow ball of cells✓
- called a blastocyst✓ Any (5)

(14)

5.6 - Diploid cells in the ovary undergo mitosis✓

- to form numerous follicles✓.
- At the onset of puberty✓
- and under the influence of FSH, ✓
- one cell inside a follicle enlarges and undergoes meiosis✓.
- Of the four cells that are produced, only one survives to form a mature, haploid ovum✓. **(4)**

5.7 5.7.1 (a) Testosterone levels✓ (1)

(b) Age✓ (1)

5.7.2 - Ask for permission for volunteers to participate✓

- Decide on the date, time and venue✓
- Decide on the sample size✓
- Decide on the age groups to use✓
- Decide on the method for recording the results✓
- Decide on the duration of the investigation✓ Any (3)

(Mark the FIRST THREE only)

5.7.3 25 – 29✓ (1)

5.7.4 - Equal number of males per age group✓

- All males were of the same health status✓
- All males were on the same diet✓
- Same interval of blood tests✓
- Same duration of the investigation✓ Any (3)

(Mark the FIRST THREE only)

5.7.5 - after which it decreases steadily with age✓ (2)

5.7.6 - decrease in testosterone levels✓
- which will result in low sperm count✓ / decreased sexual urges
- therefore, causing decreased reproduction✓ /infertility (3)

(14)

5.8 5.8.1 Pregnancy is the **condition of a female** during which an embryo or a fetus **develops within her uterus**, typically after the fertilization of an egg by a sperm✓✓ (2)

5.8.2 (a) FSH✓, oestrogen✓ (2)

(b) prolactin✓ (1)

5.8.3 Pituitary✓/hypophysis (1)

5.8.4 - Progesterone maintains the endometrium for pregnancy✓
-there will be a risk for miscarriage✓ (2)

5.8.5 $26,4 - \frac{9,8}{16,6} \times 100$✓ = 59,03✓% (59,036 or 59,04) 16,6 = 9,8✓ (3)

(11)

5.9 5.9.1 Small, non-cancerous lumps can form on the outside or inside of the uterus✓ (1)

5.9.2 - pain✓
- bloating✓
- abnormal menstruation ✓ Any 2 (2)

5.9.3 - the uterus is blocked✓ thus prevents fertilization✓

OR

-the blocked uterine lining✓ prevents embryo implantation✓

OR

-the growth and baby position✓ prevent continuation of pregnancy✓

Any (1 x 2) (2)

(5)